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Microfinance, MSMEs and the Macro Economy: Evidence from India

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Abstract

Much of prior literature on the relationship between microfinance and the macro-economy has focused on the effect of the latter in determining the success of microfinance institutions (MFIs). However, the microfinance industry has been underserved in studies evaluating microfinance as a legitimate contributor toward macro-economic growth. Researching this connection would provide a clearer direction for policymakers to support microfinance, and the institutions that foster such activities. This paper investigates the hypothesis that microfinance is not only important to the people at the bottom of the socio-economic pyramid, but for the overall health of a national economy. We explore different mechanisms as to how microfinance could affect the macro-economy, and simultaneously enable the growth of micro, small and medium enterprises (MSMEs), and evaluate the possibility of such scenarios.

Keywords: microfinance, MFIs, financial inclusion, Indian economy, MSMEs, necessity-based entrepreneurship

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Section 1: Introduction

Over the past four decades, microfinance has been a subject of intense study within the finance community, capturing the interest of academics, practitioners, and policy makers alike all across the globe. Microfinance was developed in response to the lack of access to formal financial services, a situation that affects millions of people worldwide. This forces individuals to rely on informal methods of handling their finances, which are inherently unreliable and risky. The World Bank estimates that more than 2 billion people still have no form of modern financial services, and more than 50% of adults in the poorest households remain unbanked (World Bank, *Overview*). While the issue of financial inclusion is complex and has no single solution, microfinance has gained the most popularity of all initiatives because of its formal structure and scalability in comparison to other alternatives. One of the pioneers of modern microfinance is Dr. Mohammad Yunus who began by giving small loans, which he himself funded, to small-scale women entrepreneurs in Bangladesh. After the success of his small loan experiment, Dr. Yunus went on to found Grameen Bank in 1983. In 2006, both Grameen Bank and Dr. Yunus were awarded the Nobel Peace Prize for their contribution toward social and economic development through the advancement of micro credit. This brought along a newfound legitimacy to microfinance. Because of the work of Dr. Yunus and others, microfinance has helped approximately 130 million clients. There is still more work to be done, however, as these services reach less than 20 percent of its potential market, which consists of roughly three billion people living in poverty throughout developing countries (International Finance Corporation-Microfinance).

While the aim of organized microfinance has been, from its inception, to reduce poverty, academics have argued about the extent to which it has actually had an effect on this goal.

Nevertheless, it is important to highlight the other benefits that have come from microfinance activity, which may not be obvious by looking at imprecise poverty alleviation indicators. By offering small-scale loans, savings accounts, insurance and other structured financial services to the poor, microfinance has introduced a completely new dimension to the realm of financial inclusion, inviting new opportunities and greater possibility for financial independence than ever before. Its impact on education (Viswanath, 2018), women's empowerment, children's health and other indicators, need to be further examined to gain a more well-rounded understanding of the benefits microfinance brings to national and local economies.

It is important to recognize the many channels through which microfinance can serve an economy. Channels such as health care, education, and improvement of family life are just a few examples that of this. In the present paper, though, I focus on micro, small and medium enterprises as a conduit for microfinance to affect the macro-economy. One reason for my focus is that since many micro loans are disbursed with business development purposes, (Sorokina and Khodakivska, 2015); this suggests that there is a direct connection between microfinance and these enterprises. My study will use data from India, taking into account the fact that India has emerged as a frontrunner among developing economies in recent years, by contributing to global technology efforts and by growing its exports to many countries across a variety of industries. In particular, exports from India's MSME sector have been achieving excellent growth rates this past decade, as recognized by the government of India's Development Commissioner of MSMEs[1]. Consequently, it makes sense to use Indian data to see what effect, if any, microfinance has had on broader national indicators.

[1] See 4th All India Census of MSME

Other India-specific initiatives such as Self- Help Groups (SHGs) and the bank linkage program, which work in tandem with MFIs to bring along social empowerment and economic advancement, have also helped to magnify the impact of microfinance. I discuss next, how the SHG model has paralleled the development of organized microfinance and relates to the development of MSMEs.

In India, the Self-Help Group movement began in the 1980s and gained momentum with the National Bank for Agriculture and Rural Development (NABARD). During this time, the Government of India recognized the importance of institutional credit for boosting rural economies. With the encouragement of the government, the Reserve Bank of India created a committee to review the arrangements for institutional credit for agriculture and rural development, whose responsibility was to look into these critical aspects. The NABARD, as a result, introduced the Self-Help Group Bank Linkage Program (SHG-BLP), a progressive, women-centric initiative that connected small groups of rural, unbanked individuals to formal financial services. Beyond serving as a conduit for credit, these Self-Help Groups (SHGs) act as a delivery mechanism for various other services such as entrepreneurial training, livelihood promotion activity and community development programs (Sharma and Chatterjee, 2016). However, of late, the program has experienced a downturn in its performance due to lack of training and monitoring support, as well as overall governance and quality issues in executions (Sharma and Chatterjee, 2016; NABARD). With improvements to the program's organizational structure and management methods, SHGs can help MFIs unlock their full potential as a great innovative tool for stimulating economic growth for rural households and their respective communities.

While the above discussion suggests that MFIs, with the help of SHGs, may have an impact on the macro-economy, there is very little actual research on this. Instead, most research covering microfinance has focused on its impact on poverty (Adjei et al, 2009; Khandker, 1998; Brook et al, 2008; Islam, 2009), while others have looked at the role the macro-economy has played in the success of microfinance institutions (MFIs) and MSMEs, (Doci 2017, Ahlin, C., et al 2010, Henley 2009). The argument here is that a growing economy in itself might raise a household's current or expected future income to the degree that they are willing to take on more risk by investing in a business venture (Ahlin, C., et al., 2010). As a result, credit resources such as those provided by MFIs help fund these newfound business ventures and go on to confidence in and an upturn in the macro-economy. However, little work has looked at the opposite effect, viz. the analysis of microfinance as a contributor toward macro-economic success, or even as a tool of value beyond the general objective of poverty alleviation. Research regarding this connection would provide a clearer direction for policymakers to support microfinance and the institutions that foster such activities. The encouragement of such services can potentially help a country achieve a higher level of macro-economic success.

In this paper, I test the hypothesis that microfinance is not only important to the people at the bottom of the socio-economic pyramid, but for the overall health of a national economy, as well. I discuss the transmission channels by which microfinance benefit the macro-economy, whether by enabling the growth of micro, small and medium enterprises (MSMEs[2]), stimulating childhood education and family health care, or by another avenue of investment. I focus specifically on testing the MSME channel, discussing the importance of "necessity-based"

[2] In this paper, MSMEs and SMEs can be interchangeable when reading cited texts, as they both refer to small and medium enterprises.

entrepreneurship and the role of MFIs and MSMEs in the Indian economy, followed by a discussion of methodology, empirical results, suggestions for future work, and a conclusion.

Section 2: The Nature of Entrepreneurship in Developing Countries

In this section, I look at how entrepreneurship manifests itself in developing countries and why it is important to a nation's economy, particularly at a micro or small level. Since its inception, microfinance efforts have focused on funding the development of micro and small enterprises such as the Bangladesh women's bamboo furniture business that Dr. Yunus helped finance. With challenges such as limited skills, education, and a lack of jobs in the organized sector, citizens of rural poor areas in developing countries have increasingly turned to entrepreneurship as a way to provide for their families. At the same time, it is important to recognize the distinction between this type of necessity-based entrepreneurship and its counterpart in the developed world, opportunity-based entrepreneurism (Gurtoo and Colin, 2009). To be a self-employed entrepreneur in poor, rural areas is not easy, and involves lot of hardships. Cyclical or unpredictable income flows, and a lack of adequate resources such as workspace and materials are just a few of the common burdens that make entrepreneurship unattractive to so many in the developing world. As a result, the impact of entrepreneurship, which may be taken for granted in developed economies, may not be a foregone conclusion in developing countries and needs to be demonstrated (Carree and Thurik, 2010).

In a cross-country study of 45 countries, Beck et al. (2005) showed that in developing countries, self-employment through small businesses is likely to be a last resort rather than a first option for many of the reasons discussed above. A common tendency has been to portray the informal sector as low-quality waged work where workers toil for long hours for other employers (Chen et al, 2001). Gurtoo and Williams (2009), critically evaluate this assumption by conducting an empirical survey of informal workers in India. They show that 49 percent of the informal workforce in India is employed on an own-account basis. Taking into consideration the fact that the informal sector accounts for 93 percent of all jobs in India (Economic Survey of India), this provides support contrary to the conventional depiction, many if not most entrepreneurs in developing countries and, certainly in India, are not *voluntarily* self-employed.

These entrepreneurs, nonetheless, play a vital economic role by spurring innovation, boosting local economies, developing communities, mobilizing idle capital funds and increasing the nation's economic wealth by tapping into new or underdeveloped markets. This notion finds support in an extensive World Bank study done by Cortes, Berry and Ishaq (1987) where they analyze the growth of SMEs in Colombia during the 1970s. Their research concludes that SMEs and their entrepreneurs showed a great deal of "dynamism and versatility", noting that many of these entrepreneurs had improved the designs of their products, created their own machinery, and responded flexibly to buyers' needs.

They explain:

> "The dynamic role of small firms in design innovation may reflect their close contact with final users, together with the flexibility that results from their relatively low levels of capital investment and their owners' direct involvement in day-to-day management." (Cortes, Berry and Ishaq 219)

Entrepreneurs of small firms have shown themselves to be more hands-on because of their smaller size, which allows them to have their finger directly on the pulse of local consumer demand, resulting in an important advantage over large firms, which are not able to respond as quickly. Because of this dynamism and flexibility, businesses created by such "necessity-based" entrepreneurs are a valuable part to a nation's economy, cultivating locally grown income that enables a better and more sustainable environment for all players involved. At the same time, the special character of small enterprises in developing countries means that they need more support than in developed countries. MFIs can help in the provision of additional resources and support. Having shown the importance of MSMEs, we now document the relationship between MFIs and MSMEs. The next section addresses the issue of financing of these vital businesses, and highlights how MFIs bridge the financing gap in a manner that helps foster the growth of MSMEs and helps them contribute to the national economy.

Section 3: The Role of MFIs & MSMEs in the Indian Economy

I begin with some background information on MSMEs in India, to provide a better understanding of how MSMEs could be a channel for better macro-economic outcomes. By recognizing the makeup and functions of MSMEs, and their role within the larger economy, it becomes clearer how businesses benefiting from microfinance activities can then transfer the results of these benefits to the larger economy, through either scale, business sector, or some other MSME characteristic, which more specific future research could test.

We first provide, in Table 1, a categorization of micro, small and medium sized enterprises.

Table 1. Classification of MSME Firms in India (from October 2, 2006)

Sector	Micro enterprises	Small enterprises	Medium enterprises
Manufacturing	Up to Rs. 25 Lakhs	Above Rs. 25 Lakhs but does not exceed Rs. 5 Crores	Above Rs.5 Crores but does not exceed Rs.10 Crores
Service	Up to Rs.10 Lakhs	Above Rs. 10 Lakhs rupees, but does not exceed Rs. 2 Crores	Above Rs. 2 Crores rupees but does not exceed Rs. 5 Crores rupees

Source: (Development Commissioner of MSME, 2009)
(Note: \$1= Rupees (Rs.) 50 as on April 2009, 1million = 10 lakhs, 100 lakhs = 1 crore)

This classification of MSMEs is as defined under the Micro, Small & Medium Enterprises Development (MSMED) Act 2006 using the basis of capital investment made in plant and machinery, excluding investment in land and building. Since this definition came into effect more than 10 years ago, the MSME sector has been raising a demand for revision and amendment, proposing the use of annual sales turnover rather than the investment criterion as a basis, and eliminating the distinction between manufacturing and service sectors. Nonetheless, this proposal has a long way to go before coming into effect since it still need to pass through parliament approval. Additionally, this classification does not take into account the number of people employed, which is a criticism of the MSMED Act's current definition, considering the global standard for defining MSMEs are the turnover and employment elements. According to the World Bank survey for India in 2014, however, they defined Small Enterprises as 5-19 employees, Medium Enterprises as 20-99, leaving the assumption that Micro Enterprises are 1-4 employees. For purposes of this paper, these World Bank employment size categorizations are used to define MSMEs in India.

As per India's MSME Ministry Report for 2017-2018, there are about 63.4 million operating MSMEs in India, which includes both registered and unregistered businesses, and represents approximately 80 percent of the total industrial enterprises in the country. Additionally, these MSMEs employ 117 million people, and produce more than 6,000 value-add products. While it is easy to assume that many MSMEs only serve their rural community, MSMEs provide a valuable contribution to larger companies, as we will describe later.

Table 2 below summarizes MSMEs in India by their rural or urban location and sector category as per the National Sample Survey (NSS) 73rd round, conducted during the 2015-2016 period. Their study showed that 31 percent of MSMEs were found to be engaged in manufacturing activities, while 36 percent were in Trade and 33 percent in Other Services. Out of 633.88 lakh estimated number of MSMEs, 324.88 lakh MSMEs (51.25%) operated in rural areas and the remaining 309 lakh MSMEs (48.75%) were in urban areas.

Table 2. Estimated Number of MSMEs (Activity Wise)

Activity Category	Estimated Number of Enterprises (in lakh)			Share (%)
	Rural	Urban	Total	
Manufacturing	114.14	82.50	**196.65**	31
Trade	108.71	121.64	**230.35**	36
Other Services	102.00	104.85	**206.85**	33
Electricity*	0.03	0.01	**0.03**	0
All	**324.88**	**309.00**	**633.88**	**100**

***Non-captive electricity generation and transmission and distribution by units not registered with the Central Electricity Authority (CEA)*

Source: MSME Annual Report 2017-2018

We now discuss the role of MFIs in the development and growth of MSMEs. Traditional banks in developing countries such as India are hampered by the lack of borrower information, regulatory support, and the consequent high risk and cost in providing small-scale loans for poor, rural entrepreneurs. MFIs are able to bridge this financing gap by using techniques such as joint-liability groups, thus providing micro loans, which enable the growth of MSMEs that would otherwise have little or no means of business-financing. However, MFIs not only provide necessary credit, but -- often through SHGs -- other non-financial services as well, such as business training and financial management guidance that help improve the organizational skills of their clients. This assistance consequently improves these entrepreneurs' capacity to manage their loan resources and make smart business decisions.

One of the ways in which MSMEs are important to a national economy, is through job creation. According to the MSME Ministry's Annual Report for 2015-2016, the MSME sector in India has evolved into a network of 51 million enterprises providing employment to 117.1 million persons and contributing 37.5 percent of India's GDP. As per the National Sample Survey (NSS) 73rd round conducted for the 2015-2016 period, the MSME sector has created 11.10 crore[3] jobs (360.41 lakh in Manufacturing, 387.18 lakh in Trade, 362.82 lakh in Other Services and 0.07 lakh in Non-captive Electricity Generation and Transmission) in the rural and the urban areas across the country. Table 3 further breaks down this MSME employment creation by rural and urban areas.

[3] A crore denotes ten million and is equal to 100 lakh (a hundred thousand) in the Indian numbering system, especially of rupees. Units of measurement, or people.

Table 3. Estimated Employment in MSME Sector

Broad Activity Category	Employment (in lakh)			Share (%)
	Rural	Urban	Total	
Manufacturing	186.56	173.86	360.41	**32**
Trade	160.64	226.54	387.18	**35**
Other Services	150.53	211.69	362.22	**33**
Electricity*	0.06	0.02	0.07	**0**
All	**497.78**	**612.10**	**1109.89**	**100**

*Non-captive electricity generation and transmission

Source: MSME Annual Report 2017-2018

Table 4 below shows the contribution of MSMEs to India's Gross Value Added (GVA) and Gross Domestic Product (GDP) at current prices for the last five years. These numbers show MSMEs have consistently contributed about 30% to national GDP and have maintained a steady growth in recent years.

Table 4. Contribution of MSMEs in India's Economy at Current Prices

(Figures in Rs. Crores adjusted for FISIM[3] at current prices)						
Year	MSME GVA	Growth (%)	Total GVA	Share of MSME in GVA (%)	Total GDP	Share of MSME in GDP (in %)
2011-12	2583263	-	8106946	31.86	8736329	29.57
2012-13	2977623	15.27	9202692	32.36	9944013	29.94
2013-14	3343009	12.27	10363153	32.26	11233522	29.76
2014-15	3658196	9.43	11481794	31.86	12445128	29.39
2015-16	3936788	7.62	12458642	31.60	13682035	28.77

Source: Central Statistics Office (CSO), Ministry of Statistics & Programme Implementation

As Cortes, Berry and Ishaq (2010) note,

> "To the extent that rapid growth of demand is a prerequisite of SMI[4] dynamism, one can perhaps draw no conclusions about appropriate policy except that, if an initial growth impulse can be developed, SMI potential can help to magnify it and ensure the satisfactory expansion of employment."

At a micro level, these MSMEs clearly provide direct employment for the families and other small businesses with which they interact daily. However, this article reveals the presence of a valuable multiplier effect that subsequently creates value not just for local economies, but nationally as well. Additionally, this study recognizes MSMEs' economical use of scarce resources as well exemplified by its tendency to use fewer imported inputs than Large Industry[5] enterprises, and to buy a larger proportion of their physical capital secondhand. This suggests that MSMEs further help stimulate the national economy by purchasing domestically, which creates more demand for domestic products rather than imported alternatives.

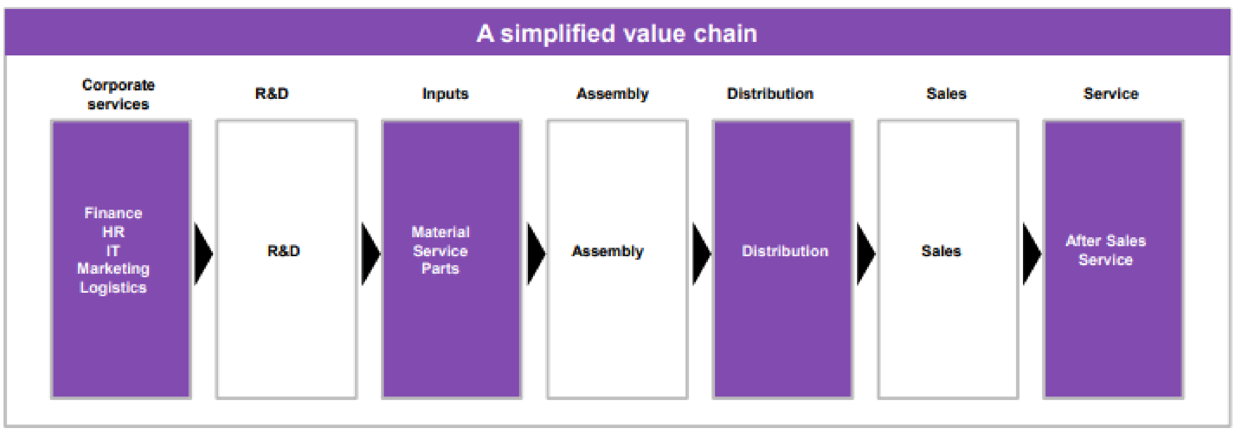
Apart from employment, MSMEs also contribute to the national economy by providing inputs in the Global Value Chain. In a report produced by Grant Thornton India in 2013, they describe MSMEs as key drivers of innovation, economic growth and new employment generation, but caution, "(t)here needs to be extra impetus towards enabling Indian MSMEs to effectively integrate with global companies and contribute further towards Indian economic growth." (p. 13) The report's case study of the Tourism sector's global value chain highlights how tourism-related MSMEs have used clustering and networking to strengthen their competitive advantage. Value-based MSME networks are established within a destination or

[4] SMI stands for small and medium industries.
[5] Large Industry is defined as a manufacturing firm with more than 100 employees.

tourism cluster and allow MSMEs to combine the advantages of small scale with the benefits of large scale. The lesson learned here is that:

> "The participation of MSMEs in value chains and networks spurs the emergence of innovative projects, behaviors and activities by generating a process of continual improvement to satisfy customer expectations." (Grant Thornton, p. 22)

Below is an overview of the various links in a value chain, which shows the different areas in which SMSEs can contribute to productivity.



Source: Grant Thornton Report 2013

Separating these different elements of the value chain has become more practical with the advancement of technology. Large firms are able to handle the segregation and outsourcing of particular elements in their value chain to MSMEs. These MSMEs therefore increase the large firm's efficiency and reduce their cost by integrating the help of MSMEs that are more equipped to focus their efforts on particular skills and strengths, therefore resulting in an overall better and more efficient product for the large firm.

For larger organizations looking to fulfill sizeable orders at a lower cost, MSMEs provide a great alternative to other more sophisticated and expensive businesses. In an article by the

Deccan Herald that discusses Dharavi, a self-created economic zone for the poor, they give an example of a profitable small business in the slum of Mumbai:

> "The order was for 2,700 briefcases, custom-made gifts for a large bank to distribute during the Diwali. The bank contacted a supplier, which contacted a leather-goods store, which sent the order to a manufacturer…the order landed in the Dharavi workshop of Mohammed Asif. (Yardley)"

Orders such as the one described above provide an excellent example of a mutually beneficial relationship by giving MSME owners and their employees an opportunity to earn on larger scale accounts, while established businesses reap the benefits of the MSMEs low-cost operations. These value-add products, combined with other services provided, account for 45 percent of the country's manufacturing output and 40 percent of the total exports[6]. A market share such as this further illustrates the existence of MSMEs as a crucial part to the Indian economy. Analyzing the health of these businesses, and their relationship with microfinance services can offer some meaningful insight on how best to manage the link between MSMEs, microfinance and the Indian economy.

It is because of these valuable characteristics of MSMEs that demand appropriate recognition and support from policymakers. Also as previously mentioned, the MSME Ministry's Annual Report shows that the MSME sector is a vital component of India's economic structure. By exhibiting resilience and flexibility (Cortes, Berry and Ishaq, 2010), these enterprises are able to ward off global economic adversities and shocks. As a result, this provides the nation with much needed stability and adaptability during times of need.

[6] MSME at a Glance, KPMG

Additionally, MSMEs' ability to withstand weakness in both its operating country and global capital markets may provide a diversification benefit for MFIs and their investors. This demonstrated in studies performed by Walter & Krauss (2006, 2008), where they tested the level of microfinance's shock resistance and ability to reduce portfolio volatility. Their empirical research results suggest that MFIs provide useful diversification value for portfolio investors seeking to diversify away country risk exposures. While the study did not show a significant detachment of MFIs from their respective domestic markets, they exhibited a notable degree of detachment from global capital markets benefiting investors looking to diversify away from global market risk (Krauss and Walter, p. 24).

Section 4: Methodology and Findings.

As mentioned before, the focus of my study is the impact of microfinance on the macro economy. I conduct a mixed time-series cross-section study, looking at the prevalence of microfinance in different states and its impact on the states' economies. I used microfinance data from MFIN, and macroeconomic data from the Government of India's Ministry of Statistics and Program Implementation since these two sources provided the largest amount of data for similar periods and geographic regions. Because of difficulty in accessing the data, I was only able to retrieve MFI information from 2013 onwards. In addition, I could only obtain approximately 4 years of GSVA and GSDP data on a quarterly basis. Furthermore, microfinance and macroeconomic data were not always available for a common list of states. Macro data was available for 32 states, while microfinance data was available for 30 states, with only 19 states appearing in both lists. In summary, my data covers the time period from 2013 to 2017 for nineteen different states. Furthermore, since complete data for all years among all states was difficult to obtain, my panel data is unbalanced with only 53 usable year-state observations.

All of my empirical testing was performed in Stata using a linear regression model. I defined the independent variable, *y*, to be a measure of microfinance activity gathered from MFIN, and the dependent variable, *x*, to be one of the macroeconomic growth metrics obtained from the Government of India. Table 5 below lists the variables and their respective descriptions. The lagged variables ensure correct directionality of the relationship results, i.e. that microfinance affects the macro economy and not vice-versa. I allow for a lag of both 1 and 2 years.

Table 5. Variables Defined

Micro Variables (*y*)		**Macro Variables (*x*)**	
Name	Description	Name	Description
GLP	Gross Loan Portfolio	GSVA	Total Gross State Value Added
ActBor	Number of Active Borrowers	Sub	Subsidies on Products
Lamt	Amount of Micro Loans Disbursed	Taxes	Taxes on Products
Lamtlg1| lg2	Amount of Micro Loans Disbursed with a lag of 1 and 2 years	GSDP	Gross State Domestic Product
GLPlg1| lg2	Gross Loan Portfolio with a lag of 1 and 2 years	Pop	Population Size
dLamt	Difference between Lamt and 1 year lagged Lamt	PcGSDP	Per Capita Gross State Domestic Product
dLamtlg1	dLamt with a lag of 1 year	dGSDP	Difference between GSDP and GSDP with a lag of 1 year

The following definitions are from the UK Office for National Statistics.

GSVA (GVA for a national economy) is a measure of the total output and income in the state economy. It provides the rupee value of the amount of goods and services produced in the state after deducting the cost of inputs and raw materials that have gone into the production of those goods and services. It also gives a sector-specific picture of what the growth is in a particular area, industry or sector of an economy. At a macro level, it is calculated as the sum of a country's (or state's) Gross Domestic Product (GDP), net of subsides and taxes in the economy.

GSDP is a measure of the state's economic output from the consumption side. It is calculated as the sum of private consumption, essentially the difference between exports and imports in the country. For many years, policy makers have used GDP as a basis for their analysis of the health of a national economy. More recently, however, these policy makers have begun looking at GVA as the sector-wise breakdown of this measurement provides policy makers a clearer picture to determine how best to formulate sector-specific programs, stimulus packages or policies. GDP (GSDP) will always remain a key measure for cross-country analysis, but paired with GVA (GSVA), we can get a better idea of state or national economic health. Using both measures allows us to test for the robustness of our empirical results.

I regressed both GSDP and GSVA against the amount of MFI loans disbursed (Lamt), and MFI gross loan portfolios (GLP) with lags of one and two years. Table 6 shows the summary of the results of the regressions. As noted, the slope coefficients were significant in all of the regressions. In fact, I found a statistically significant relationship between GSVA/GSDP and GLP/Lamt, even the latter were lagged one and two years. . This suggests that the directionality of the effect is clearly from microfinance to macro health, rather than the other way around. Finally, I ran the same regression in first differences, as well. The estimated regression was:

$$\underset{(2.12)}{dGSDP = 0.0026} + \underset{(1.83)}{3425556}\ dLamt$$

Table 6. Summary of Regression Results

		Dependent Variable GSDP	Dependent Variable GSVA
GLP	Intercept	0.0021 (5.75)	0.0019 (5.92)
	Coefficient	3.01 (4.45)	2.78 (4.67)
GLPlg1	Intercept	0.0026 (4.20)	0.0024 (4.34)
	Coefficient	3.31 (3.49)	3.04 (3.66)
GLPlg2	Intercept	0.0025 (2.26)	0.0022 (2.34)
	Coefficient	4.05 (2.62)	3.68 (2.73)
Lamt	Intercept	0.0046 (4.90)	0.0042 (5.02)
	Coefficient	3.63 (5.43)	3.34 (5.67)
Lamtlg1	Intercept	0.0089 (4.33)	0.0080 (4.48)
	Coefficient	3.41 (3.73)	3.13 (3.92)
Lamtlg2	Intercept	0.0109 (2.86)	0.0099 (3.01)
	Coefficient	3.72 (2.65)	3.38 (2.79)

Note: All intercept coefficients are divided by 10^7 for convenience of reading. All slope coefficients are significant in a one-tailed test at the 5% significance level. The critical *t*-values for a one-tailed test at the 5% level of significance are 1.68, 1.20 and 1.75 for 51, 32 and 15 degrees of freedom respectively.

This confirms that the estimated relationship is not due to some overall secular trend, but rather that it is indeed microfinance activity that is affecting economic health at the state level.

Section 5: Future Research

The next step would be to study the actual channels by which microfinance influences the macro economy. The results from my research have highlighted that there is in fact an impact from the MFIs' microcredit disbursement on the greater economy, but this begs the question of exactly how this impact is transmitted. While we suggested that MSMEs are drivers of economic growth, microfinance could add value not just through its impact on business activity, but also through improvements in the personal lives of the poor, which in turn results in a positive impact on the macro-economy. Focusing on other measures of microfinance activity, such as the number of active borrowers could help distinguish between the different possible transmission channels.

For example, if GLP were related to GSVA, but not the number of active borrowers, this might suggest that the transmission is through the businesses themselves rather than through the numbers of borrowers whose personal lives may be affected by microfinance through better health and education. On the other hand, if the number of borrowers is also related to GSVA, then perhaps the betterment of borrowers' personal lives through microfinance is the catalyst for macroeconomic growth. More specifically, microcredit would be posited to add value by improving the quality of life for a family when the funds are spent on tools such as education, health care, home improvement, or other personal investments. While these investments might not exhibit the same direct profit generating qualities that a MSME advertises, they do have their effect on people's lives, especially to those at the bottom of the socio-economic pyramid. Further research of the extent to which such channels of investment help a nation's macro economy is needed so as to provide more evidence for decisions regarding the direction for microfinance efforts.

Another competing micro-level force affecting macroeconomic growth is MNREGA (Mahatma Gandhi National Rural Employment Guarantee). The MNREGA Act, first established in 2005, aims at enhancing the livelihoods of people in rural areas by guaranteeing 100 days of wage-employment in a financial year to rural households whose adult members volunteer to do unskilled manual work. According to the Brookings Institution, MNREGA has had a positive effect on financial security. The program raised the probability of a poor household holding savings by 21 percent, and the per capita amount saved per month increased 15 percent from Rs. 119, on average. With regard to health outcomes, there was a significant reduction of 12 percent in the incidence of reported depression. According to the Brookings Institution, other self-reported indicators of mental health such as anxiety and tension have also shown significant improvements over time. As such, evaluating the macroeconomic impact of MNREGA and comparing this to regional MFI activity can allow us to look at the interaction between these two institutions that help the rural poor. To the extent that there is regional variation in the participation of women in MFI credit, the role of women as a channel for the impact of microfinance on macroeconomic health can also be studies.

Finally, it would be interesting to examine the difference in the success rates of MSMEs between rural and urban areas. As of now, little to no research has compared the success of MSMEs and microfinance success across different regions. Perhaps microfinance and MSMEs thrive better in rural areas, compared to urban areas. The hypothesis here could be that a lower-income environment is better-suited and more willing to support lesser-complicated business models, therefore resulting in a higher success rate. Conversely, well-established urban areas could possibly provide trickle-down value in the form of increased business traffic or higher quality competition that helps MSMEs and microfinance efforts get a strong start from an already lively economy, resulting in their continued success.

Section 6: Conclusion

Based on the regressions from my research, I tentatively conclude that microfinance has had a significant impact on the macro economy of India. The empirical research performed so far supports the hypothesis; however, further testing is needed to gain substantiation of such a relationship. Continuation of this research should explore the various channels by which microfinance impacts the macro economy. For example, what are the drivers of microfinance's impact on the macro economy? Is it education, personal health, global value chain or another unknown variable? Is the macro impact of microfinance stronger in larger and better-organized states, or are smaller, more nimble states better able to harness this relationship? Are there other explanations for the relationships that this research has uncovered? These are questions that further research could answer and help us better understand the ever-changing landscape of microfinance.

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